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SHEN, KEZHEN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/539,312	**Applicant(s)** ZHOU, YU	
	Examiner Kezhen Shen	**Art Unit** 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 June 2005_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-15_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-15_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,046,967 to Takagi et al. in view of U.S. Patent Pub. 2001/0021148 A1 to Yokoyama et al.

Regarding claim 1, Takagi discloses the disc drive apparatus comprising: scanning means for scanning a record track of an optical disc and for generating a read signal (Fig. 1, column 3, lines 20-56); actuator means for controlling the positioning of at least one read/write element of said scanning means with respect to the disc (Fig. 1, column 3, lines 20-56); a control circuit for receiving said read signal and generating at least one actuator control signal on the basis of at least one signal component of said read signal (Fig. 1, column 3, lines 20- 56); wherein the control circuit comprises: means for calculating at least one error signal on the basis of the said read signal (Fig. 2, columns 3-4, lines 57-2); error signal processing means for receiving said at least one error signal and for outputting derived signals (Fig. 2, columns 3 line 57 to column 4 line 2); shock detector means (11) for generating a shock indication signal and generating a shock indication signal from the said first derived signal (Fig. 3 columns 3 line 57 to

column 4 line 19); the actuator control signal generator means being coupled to receive the shock indication signal from the shock detector means (Fig. 3, column 4, lines 3-19). Takagi is deficient to disclosing the disc drive apparatus comprising: actuator control signal generator means having at least one variable control parameter, for receiving one of said derived signals from said error signal processing means and for processing this derived signal for generating an actuator signal; and the actuator control signal generator means being designed to set a first value for said variable control parameter during normal operation, and to set a second value for said variable control parameter when said shock indication signal indicates the occurrence of a shock; wherein said actuator control signal generator means is designed to perform sliding mode control.

However, Yokoyama discloses the disc drive apparatus comprising: actuator control signal generator means having at least one variable control parameter, for receiving one of said derived signals from said error signal processing means and for processing this derived signal for generating an actuator signal (Fig. 9A-B, paragraphs 110-111); and the actuator control signal generator means being designed to set a first value for said variable control parameter during normal operation, and to set a second value for said variable control parameter when said shock indication signal indicates the occurrence of a shock (Fig. 13-14B, paragraph 22). Takagi and Yokayama are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to create an optical disc apparatus that comprises a scanning means

for scanning a record track on the optical disc and an actuator control signal generator means having at least one variable control parameter. The suggestion/motivation would have been for defect detection as taught by Takagi in view of Yokayama (Fig. 14A-B, paragraph 22).

Regarding to claim 2, Takagi as modified discloses the disc drive apparatus, wherein said first processed signal comprises said predicted position signal (Fig. 3, column 4, lines 3-19) and wherein said shock detector means are designed to generate said shock indication signal on the basis of said predicted position signal (Fig. 3, column 4, lines 3-19).

Regarding to claim 13, Takagi is deficient to disclosing the disc drive apparatus, wherein said control circuit further comprises: disturbance estimator means for receiving said actuator signal from said actuator control signal generator means; the disturbance estimator means being designed to generate an estimated disturbance signal on the basis of said actuator signal and said third derived signal; wherein said actuator control signal generator means is coupled to receive said estimated disturbance signal from the disturbance estimator means actuator control signal generator means being designed to calculate its output signal on the basis of said estimated disturbance signal; and the disc drive apparatus for receiving a third derived signal from said error signal processing means.

However, Yokoyama discloses the disc drive apparatus, wherein said control circuit further comprises: disturbance estimator means for receiving said actuator signal from said actuator control signal generator means (Fig. 16A-B, paragraphs 31-32); the

disturbance estimator means being designed to generate an estimated disturbance signal on the basis of said actuator signal and said third derived signal (Fig. 16A-B, paragraphs 31-32); wherein said actuator control signal generator means is coupled to receive said estimated disturbance signal from the disturbance estimator means (Fig. 16A-B, paragraphs 31-32), said actuator control signal generator means being designed to calculate its output signal on the basis of said estimated disturbance signal (Fig. 9A-B, paragraphs 110-111).

Yokoyama is deficient to disclosing the disc drive apparatus for receiving a third derived signal from said error signal processing means.

However, Ramano discloses the disc drive apparatus for receiving a third derived signal (or3) from said error signal processing means (Fig. 3E, columns 7- 8, lines 31-21). In addition, the same motivation is used as the rejection for claim 1.

Regarding to claim 15, Takagi discloses the disc drive apparatus, wherein said actuator signal generated by said actuator control signal generator means is a digital actuator signal (Fig. 1, column 3, lines 20-56), and wherein said control circuit further comprises: D/A signal processing means for receiving said digital actuator signal from said actuator control signal generator means and for generating an analogue actuator signal (Fig. 1, column 3, lines 20-56); preferably, noise filter means for receiving said analogue actuator signal from said D/A signal processing means and for generating a filtered actuator signal (Fig. 1, column 3, lines 20-56); actuator driver means for receiving said analogue actuator signal from said D/A signal processing means or

receiving said filtered actuator signal, and for generating an actuator drive signal (Fig. 1, column 3, lines 20-56).

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,046,967 to Takagi et al. in view of U.S. Patent Pub. 2001/0021148 A1 to Yokoyama et al. in further view of U.S. Patent No. 5,847,895 to Romano et al. in further view of U.S. Patent No. 6,465,981 B2 to Zhang et al. in further view of US 7,349,296 to Akkermans et al .

Regarding claim 3, see the discussion of Takagi et al, Yokoyama et al, Romano et al in claim 8 above. Takagi as modified is deficient to disclosing the disc drive apparatus, wherein said shock detector means comprise: a low pass filter for receiving said predicted position signal; and a comparator for receiving an output signal from said low pass filter and for providing said shock indication signal.

However, Akkermans discloses the disc drive apparatus, wherein said shock detector means comprise: a low pass filter for receiving said predicted position signal (Fig. 7, columns 6-7, lines 50-17); and a comparator for receiving an output signal from said low pass filter and for providing said shock indication signal (Fig. 7, columns 6-7, lines 50-17).

Takagi, Yokoyama, Romano, Zhang, and Akkermans are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to create a disc drive apparatus comprising: a scanning means for

scanning an optical disc and a comparator for receiving an output signal from a low pass filter. The suggestion/motivation would have been in order to compare the signal to a reference signal to determine if the output signal is an error signal as taught by Takagi in view of Akkermans (Fig. 7, columns 6-7, lines 50-17).

Regarding claim 4, Takagi as modified is deficient to disclosing the disc drive apparatus, wherein said low pass filter has a cut-off frequency in the order of about 850 Hz.

However, Akkermans discloses the disc drive apparatus, wherein said low pass filter has a cut-off frequency in the order of about 850 Hz (Column 1, lines 59-61). In addition, the same motivation is used as the rejection for claim 3 above.

Regarding to claim 5, Takagi as modified is deficient to disclosing the disc drive apparatus, wherein said comparator is designed to compare the output signal from said low pass filter with a predefined threshold value which, in the case of radial control, corresponds to approximately 25% of the track pitch.

However, Akkermans discloses the disc drive apparatus, wherein said comparator is designed to compare the output signal from said low pass filter with a predefined threshold value which, in the case of radial control, corresponds to approximately 25% of the track pitch (Fig. 2 and 3, column 4, lines 37-63). In addition, the same motivation is used as the rejection in claim 3 above.

Regarding to claim 6, Takagi as modified is deficient to disclosing the disc drive apparatus, wherein said comparator is designed to compare the output signal from said

low pass filter with a predefined threshold value which, in the case of radial control, corresponds to approximately 20% of the track pitch.

However, Akkermans discloses the disc drive apparatus, wherein said comparator is designed to compare the output signal from said low pass filter with a predefined threshold value which, in the case of radial control, corresponds to approximately 20% of the track pitch (Fig. 7, columns 6-7, lines 50-17). In addition, the same motivation is used as the rejection for claim 3 above.

Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,046,967 to Takagi et al. in view of U.S. Patent Pub. 2001/0021148 A1 to Yokoyama et al. in further view of U.S. Patent No. 5,847,895 to Romano et al.

Regarding to claims 7-10, Takagi fails to disclose the disc drive apparatus, wherein said error signal processing means comprises a state estimator which is coupled to receive said actuator signal from said actuator control signal generator means; wherein said state estimator is designed to calculate a predicted position signal in accordance with the formula, wherein said state estimator is designed to calculate a predicted speed signal in accordance with the formula, wherein Ad (2x2) and Bd (2xl) are constant matrices and vectors for the discrete model of the actuator; and wherein x(k) and v(k) are estimated values for the current position and the current speed of the actuator, respectively; and wherein said state estimator is designed to calculate x(k) and v(k) in accordance with the formulas, wherein Lres and Lv are the estimator gains, preferably determined by the Linear Quadratic Regulator (LQR) method.

However, Yokoyama discloses the disc drive apparatus, wherein said error signal processing means comprises a state estimator which is coupled to receive said actuator signal from said actuator control signal generator means (Fig. 16A-B, paragraphs 31-32); wherein Ad (2x2) and Bd (2xl) are constant matrices and vectors for the discrete model of the actuator (Fig. 3A, columns 5-6, lines 12-6).

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to create an optical disc apparatus that comprises a scanning means for scanning a record track on the optical disc and an actuator control signal generator means having at least one variable control parameter. The suggestion/motivation would have been for defect detection as taught by Takagi in view of Yokayama (Fig. 14A-B, paragraph 22).

Yokoyama is deficient to disclosing the disc drive apparatus wherein said state estimator is designed to calculate a predicted position signal in accordance with the formula; wherein said state estimator is designed to calculate a predicted speed signal in accordance with the formula; wherein x(k) and v(k) are estimated values for the current position and the current speed of the actuator, respectively; and wherein said state estimator is designed to calculate x(k) and v(k) in accordance with the formulas, wherein Lres and Lv are the estimator gains, preferably determined by the Linear Quadratic Regulator (LQR) method.

However, Ramano discloses the disc drive apparatus wherein said state estimator is designed to calculate a predicted position signal in accordance with the formula(Fig. 3A, columns 5-6, lines 13-6); wherein said state estimator is designed to

calculate a predicted speed signal in accordance with the formula (Fig. 3A, columns 5-6, lines 13-6); wherein x(k) and v(k) are estimated values for the current position and the current speed of the actuator, respectively (Fig. 3E, columns 7-8, lines 31-13); and wherein said state estimator is designed to calculate x(k) and v(k) in accordance with the formulas, wherein Lres and Lv are the estimator gains, preferably determined by the Linear Quadratic Regulator (LQR) method (Fig. 3A, columns 5-6, lines 12-6). In addition, the same motivation is used as the rejection for claim 2.

Regarding claim 11, Takagi and Yokayama are both deficient to disclosing the disc drive apparatus wherein said actuator control signal generator means is designed to perform sliding mode control.

However, Ramano discloses the disc drive apparatus wherein said actuator control signal generator means is designed to perform sliding mode control (Fig. 6, columns 8-9, lines 66-20).

Takagi, Yokoyama, and Ramano are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time on invention, it would have been obvious to a person of ordinary skilled in the art to create an optical disc apparatus that comprises a scanning means for scanning a record track on the optical disc and have an actuator control signal generator means designed to perform sliding mode control. The suggestion/motivation would have been in order to generate an error signal as taught by Ramano (Fig. 6, columns 8-9, paragraph 22).

Claims 12 and 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,046,967 to Takagi et al. in view of U.S. Patent Pub. 2001/0021148 A1 to Yokoyama et al. in further view of U.S. Patent No. 5,847,895 to Romano et al. in further view of U.S. Patent No. 6,465,981 B2 to Zhang et al.

As to claim 12, Takagi is deficient to disclosing the disc drive apparatus, disclosing the disc drive apparatus, wherein said error signal processing means is designed to calculate estimated values x(k) and v(k) for the current actuator position and speed; wherein the actuator control signal generator means is coupled to receive said estimated current actuator position and speed signals from said error signal processing means; and wherein said actuator control signal generator means is designed to calculate its output signal on the basis of the estimated values received from said error signal processing means and wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kk1 and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains; wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time-invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=O defines a stable sliding surface; wherein sat(gres'x(k)+gv'v(k)/Φ) defines a saturation function; and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means; and wherein x(k) and v(k) are signals representing values for the current actuator position and speed; wherein x(k) and v(k) are signals representing values for the current actuator position and speed; wherein said actuator control signal generator

means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains; wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time-invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=O defines a stable sliding surface; wherein sat(gres'x(k)+gv'v(k)/Φ) defines a saturation function; and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means.

However, Yokoyama discloses the disc drive apparatus wherein x(k) and v(k) are signals representing values for the current actuator position and speed (Fig. 17A-C, paragraphs 33-36) wherein said error signal processing means is designed to calculate estimated values x(k) and v(k) for the current actuator position and speed (Fig. 17A-C, paragraphs 104- 106); wherein the actuator control signal generator means is coupled to receive said estimated current actuator position and speed signals from said error signal processing means (Fig. 17A-C, paragraphs 104-106); and wherein said actuator control signal generator means is designed to calculate its output signal on the basis of the estimated values received from said error signal processing means (Fig. 9A-B, paragraphs 110-111).

Takagi and Yokayama are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to create an optical disc apparatus that comprises a scanning means for scanning a record track on the optical disc and an actuator control signal generator

means having at least one variable control parameter. The suggestion/motivation would have been for defect detection as taught by Takagi in view of Yokayama (Fig. 14A-B, paragraph 22).

Takagi as modified are deficient to disclosing the disc drive apparatus, wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains; wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time-invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=O defines a stable sliding surface; wherein sat(gres'x(k)+gv'v(k)/ Φ) defines a saturation function; and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means.

However, Ramano discloses the disc drive apparatus, wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains (Fig. 5, column 8, lines 21-34); wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time- invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=O defines a stable sliding surface (Fig. 3C, column 6, lines 40-53).

Takagi, Yokoyama, and Ramano are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time on invention, it would have been obvious to a person of ordinary skilled in the art to create an optical disc apparatus that comprises a scanning means for scanning a record track on the optical disc and have an actuator control signal generator means designed to perform sliding mode control. The suggestion/motivation would have been in order to generate an error signal as taught by Ramano (Fig. 6, columns 8-9, paragraph 22).

Takagi as modified are deficient to disclosing the disc drive apparatus wherein sat(gres'x(k)+gv'v(k)/¢) defines a saturation function; and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means.

However, Zhang discloses the disc drive apparatus wherein sat(gres'x(k)+gv'v(k)/ Φ) defines a saturation function (Fig. 3, column 4, lines 26- 39); and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means (Fig. 3, 318, column 3, lines 52-61).

Takagi, Ramano, and Zhang and Yokoyama are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to create a disc drive apparatus comprising: a scanning means for scanning an optical disc and an equation that describes the actuator dynamic characteristics. The suggestion/motivation would have been in order to make a VCM loop for stabilizing the closed-loop system as taught by Takagi in view of Zhang (Columns 3-4, lines 57-11).

As to claim 14, Takagi as modified is deficient to disclosing the disc drive apparatus, wherein said error signal processing means is designed to calculate estimated values x(k) and v(k) for the current actuator position and speed; wherein the actuator control signal generator means is coupled to receive said estimated current actuator position and speed signals from said error signal processing means; and wherein said actuator control signal generator means is designed to calculate its output signal on the basis of the estimated values received from said error signal processing means, and wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains; wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time-invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=0 defines a stable sliding surface; wherein sat(gres'x(k)+gv'v(k)/ Φ) defines a saturation function; and wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means; and wherein x(k) and v(k) are signals representing values for the current actuator position and speed.

However, Yokoyama discloses the disc drive apparatus wherein said error signal processing means is designed to calculate estimated values x(k) and v(k) for the current actuator position and speed (Fig. 17A-C, paragraphs 104- 106); wherein the actuator control signal generator means is coupled to receive said estimated current actuator position and speed signals from said error signal processing means (Fig. 17A-C, paragraphs 104-106); and wherein said actuator control signal generator means is

designed to calculate its output signal on the basis of the estimated values received from said error signal processing means (Fig. 9A-B, paragraphs 110-111) and wherein x(k) and v(k) are signals representing values for the current actuator position and speed (Fig. 17A-C, paragraphs 33-36).

It would have been obvious to have modified Takagi with the teaching of Yokoyama. In addition, the same motivation is used as the rejection for claim 12.

Ramano is deficient to disclosing the disc drive apparatus, wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains; wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time-invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=0 defines a stable sliding surface; wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means.

However, Ramano discloses the disc drive apparatus, wherein said actuator control signal generator means is designed to calculate its output signal according to the formula, wherein kkl and kk2 and k are coefficients determined by the actuator dynamic characteristics and the SMC controller gains (Fig. 5, column 8, lines 21-34); wherein S(k) = gres'x(k)+gv'v(k) = 0 describes a time- invariant surface in the state space, "gres" and "gv" being constants which are selected such that S(k)=0 defines a stable sliding surface (Fig. 3C, column 6, lines 40-53).

Takagi, Yokoyama, and Ramano are analogous art because they are from the same field of endeavor with respect to optical disk apparatuses.

It would have been obvious to have modified Takagi as modified with the teaching of Ramano. In addition, the same motivation is used as the rejection for claim 2.

Ramano is deficient to disclosing the disc drive apparatus wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means.

However, Zhang discloses the disc drive apparatus wherein s is a gain factor being the said variable control parameter of the SMC actuator control signal generator means (Fig. 3, 318, column 4, lines 52-61). In addition, the same motivation is used as the rejection for claim 12.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kezhen Shen whose telephone number is (571) 270-1815. The examiner can normally be reached on Monday-Friday 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kezhen Shen/
Examiner, Art Unit 2627

/Joseph H. Feild/
Supervisory Patent Examiner, Art Unit 2627